

AMENDMENTS TO THE SPECIFICATION:

Please amend the title at page 2, line 7 as follows:

Objects**Brief Summary of the invention**

Please amend the paragraph beginning at page 2, line 8, as follows:

~~The~~One main object of the inventin is to provide a method for the stochastic analysis to quantify the earth's subsurface area heat flow and its error bounds and which ~~obviates the~~reduces drawbacks of the prior art enumerated above.

Please delete the title at page 2, line 7.

Please amend the title at page 3, line 10 as follows:

Detailed description of**exemplary embodiments of the invention**

Please amend the paragraph at page 3, beginning at line 11:

The present ~~invention~~embodiment relates to solving the governing stochastic heat conduction equation to obtain the mean and variance in the heat flow fields. The governing heat conduction equation in steady state is expressed as

Please amend the paragraph at page 3, beginning at line 15:

The present ~~invention~~embodiment relates to solving the governing stochastic heat conduction equation to obtain the mean and variance in the heat flow fields as shown in Figure 1.

Please amend the paragraph at page 3, beginning at line 23:

In the present ~~invention~~embodiment the radiogenic heat production is assumed to be exponentially decreasing function and the thermal conductivity is considered to be a random parameter which is expressed as a sum of a deterministic component and a random component. The stochastic heat conduction equation then reduces to

Please amend the paragraph at page 4, beginning at line 19:

In this ~~invention~~embodiment the closed form analytic expressions for mean heat flow and error bounds on heat flow have been obtained. The expression for heat flow with random thermal conductivity is expressed as

Please amend the paragraph at page 6, beginning at line 4:

~~The~~A novelty in the present invention over the prior art methods resides in that the method uses randomness in thermal conductivity structure to quantify errors in heat flow and leads to closed form solutions to the mean and its error bounds on the subsurface heat flow.

Please amend the paragraph at page 6, beginning at line 7:

The present ~~invention~~embodiment describes a method of solving the stochastic heat conduction equation to obtain the closed form solution to the mean and variance in the heat flow fields. Using the thermal conductivity to be a random parameter the stochastic heat conduction equation has been solved and first the solution to the temperature field is built using a series expansion method. Next the expression for heat flow is obtained and subsequently the expressions for the mean and variance in heat flow have been derived.

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Appl. No. 10/813,436
October 7, 2005

Please amend the paragraph at page 6, beginning at line 13:

The aim of this ~~invention~~embodiment is to provide exact formula for quantifying the error bounds on the subsurface heat flow.

Please amend the title at page 10, before claim 1:

~~Claims:~~WHAT IS CLAIMED IS: